CLAIMS

1. A lithium electrochemical cell system, comprising:

a secondary lithium ion cell including:

a lithium metal oxide positive electrode, and

a negative electrode having a crystalline carbon, a first electrolyte composed of a lithium salt, and a blend of at least two aprotic solvents;

a lithium ion secondary electrochemical cell including:

a lithium metal oxide positive electrode, and

a negative electrode having a crystalline carbon, a second electrolyte having a first degassing agent, and a blend of at least two aprotic solvents; and

a lithium-metal based primary or secondary electrochemical cell.

2. The cell system of claim 1, wherein the at least two aprotic solvents of the negative electrode of the secondary lithium ion cell are selected from the group consisting of ethylene carbonate, dimethyl carbonate, ethyl methyl carbonate, propylene carbonate, diethyl carbonate, and an agent that reduces cell gassing.

3. The cell system of claim 2, wherein the lithium salt of the negative electrode of the secondary lithium ion cell is selected from the group consisting of $LiPF_6$, $LiBF_4$ and $LiAsF_6$.

4. The cell system of claim 3, wherein the electrolyte of the lithium ion secondary electrochemical cell comprises at least one of a liquid gel and solid polymer with a dissolved salt selected from the group consisting of $LiClO_4$,

$LiPF_6$, $LiBF_4$, $LiAsF_6$, $LiCF_3SO_3$, $Li(CF_3SO_2)_2N$, $Li(CF_3SO_2)_3C$, $LiN(SO_2C_2F_5)_2$, lithium alkyl fuorophosphate, lithium bis(chelato)borates and mixtures thereof.

5. The cell system of claim 3, wherein at least one of the lithium-metal based primary and the secondary electrochemical cell comprise:

a negative electrode including lithium metal;

a metal oxide positive electrode selected from the group consisting of $LiCoO_2$, $LiNiO_2$, $LiNi_{1-x}Co_yMe_zO_2$, $LiMn_{0.5}Ni_{0.5}O_2$, $LiMn_{0.3}Co_{0.3}Ni_{0.3}O_2$, $LiFePO_4$, $LiMn_2O_4$, $LiFeO_2$, $LiMc_{0.5}Mn_{1.5}O_4$, vanadium oxide, and mixtures thereof, wherein Me is selected from the group consisting of Al, Mg, Ti, B, Ga, or Si, and Mc is a divalent metal;

at least one of a liquid electrolyte comprising a lithium salt, a liquid polymer, a solid polymer and a plastized electrolyte; and

a second degassing agent.

6. The cell system of claim 1, wherein the first degassing agent comprises a constituent from the class of organic compounds having the structure $CH_2=R_1=CH_2$, wherein R_1 is an aliphatic carbon chain of 1 to 7 carbons, either linear or branched.

7. The cell system of claim 1, wherein the first degassing agent comprises a compound having a formula selected from the group consisting of $CH\equiv R_1\equiv CH$, $CH_2=R_1$, and $CH\equiv R_1$, wherein R_1 is an aliphatic carbon chain of 1 to 7 carbons.

8. The cell system of claim 1, wherein the first degassing agent comprises a compound or a blend of compounds having a formula selected from the group consisting of $R_2\text{-}C=R_1=CH2$, $R_2\text{-}C\equiv R_1\equiv CH$, $R_2\text{-}CH=R_1$ and R_2-

$C \equiv R_1$, wherein R_2 is an aromatic, a cyclic hydrocarbon, or an aromatic or cyclic hydrocarbon blended with a material selected from the group consisting of a pyrrole, a piperazine, a piperidine molecule, a vinyl phrrole, a vinyl piperazine, and a vinyl piperidine, and wherein R_1 is an aliphatic carbon chain of 1 to 7 carbons.

9. The cell system of claim 1, wherein the first degassing agent comprises styrene carbonate, aromatic carbonates a blend of styrene carbonate and an aromatic carbonate, or a blend of styrene carbonate or an aromatic carbonate and a material selected from the group consisting of vinyl pyrrole, vinyl piperazine, vinyl piperidine, vinyl pyridine, pyrrole, a piperazine, a piperidine molecule, and a triphenyl phosphate.

10. The cell system of claim 1, wherein the first degassing agent comprises a compound selected from the group consisting of 2,3 dimethyl-1,3 butadiene, 1,3 butadiene, 2,3 dimethyl-1,4 pentadiene, and 1,5 hexadiene.

11. The cell system of claim 1, wherein the first degassing agent comprises a blend of 2,3 dimethyl-1,3 butadiene and vinyl ethylene carbonate.

12. The cell system of claim 1, wherein the first degassing agent comprises a blend of 2,3 dimethyl-1,4 pentadiene and vinyl pyridine.

13. The cell system of claim 1, wherein the first degassing agent comprises a blend of 1,5 hexadiene and piperazine.

14. The cell system of claim 1, wherein the first degassing agent comprises a blend of 2,3 dimethyl-1,3 butadiene and styrene.

15. The cell system of claim 1, wherein the first degassing agent comprises a blend of 2,3 dimethyl-1,3 butadiene and piperidine.

16. The cell system of claim 1, wherein the first degassing agent comprises a blend of hexadiene and vinyl pyridine.

17. The cell system of claim 1, wherein the first degassing agent comprises a blend of 2,3 dimethyl-1,3 butadiene and triphenyl phosphate.

18. The cell system of claim 1, wherein the first degassing agent comprises a blend of 2,3 dimethyl-1,3 butadiene and vinyl pyridine.

19. The cell system of claim 1, wherein the first degassing agent comprises styrene carbonate.

20. The cell system of claim 1, wherein the first degassing agent comprises a blend of styrene carbonate and vinyl piperazine.